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The Investment Climate and the Firm

Firm-Level Evidence from China

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Abstract

The importance of a country's "investment climate" for economic growth has recently received much attention. Hallward-Driemeier, Wallsten, and Xu address the general lack of appropriate data for measuring the investment climate and its effects. The authors use a new survey of 1,500 Chinese enterprises in five cities to more precisely define and measure components of the investment climate, highlight the importance of firm-level data for rigorous analysis of the investment climate, and investigate empirically the effects of this comprehensive set of measures on firm performance in China. Overall, their firm-level analysis reveals that the main determinants of firm performance in China are international integration, entry and exit, labor market issues, technology use, and access to external finance.

This paper—a product of Investment Climate, Development Research Group—is part of a larger effort in the group to understand the investment climate using firm-level datasets. Copies of the paper are available free from the World Bank, 1818 H Street NW, Washington, DC 20433. Please contact Paulina Sintim-Aboagye, room MC3-422, telephone 202-473-7644, fax 202-522-1155, email address psintimaboagye@worldbank.org. Policy Research Working Papers are also posted on the Web at http://econ.worldbank.org. The authors may be contacted at mhallward@worldbank.org, swallsten@worldbank.org, or lxu1@worldbank.org. March 2003. (49 pages)

The Investment Climate and the Firm:
Firm-Level Evidence from China

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In recent years, policy makers and multinational organizations have focused increasingly on the importance of a sound "investment climate" in developing countries for economic growth (Stern, 2002b). Focusing on investment used to mean advocating increased investment quantities under the assumption that a financing gap was a barrier to development. Few accept this simplistic view anymore, and, indeed, recent research demonstrates surprisingly little correlation between investment levels and growth rates, at least in the short run (Easterly 1999). Instead, a productive "investment climate" can be broadly thought of as an environment where governance and institutions support entrepreneurship and well-functioning markets in order to help generate growth and development.

It is difficult to define "investment climate" precisely, but Stern (2002b) notes that it is the "policy, institutional, and behavioral environment, both present and expected, that influences the returns, and risks, associated with investment." In general, this includes three broad categories. The first includes macroeconomic or country-level matters, such as fiscal, monetary, exchange rate policies, and political stability. The second includes governance and institutions, including bureaucratic harassment and the financial and legal systems. The final category includes infrastructure necessary for productive investment, including transportation, electricity, and communications.[1]

While these categories seem straightforward, identifying their effects is not easy. In particular, the second two categories pose special difficulties. In addition to measurement problems (e.g., eliciting truthful responses about bribery and corruption), another issue is that many of these factors affect individual firms and may not show up in useful ways in aggregate macroeconomic statistics. For example, it is often noted that India and China have grown at dramatically different rates over the past decade so that while they had similar per capita incomes in 1990, the average Chinese citizen now has an income 50 percent higher than the average Indian citizen. Moreover, as this paper will demonstrate, firms grow in quite different pace in the five Chinese cities even though they face similar macro and national political environments. Uncovering the factors underlying such large differences in growth rates requires microeconomic, as opposed to macroeconomic, data. Unfortunately, there is often very little

[1] There are several ways one might group various investment climate components. In this paper we generally follow the typology laid out by Stern (2002a; Stern 2002b).

firm-level data in developing countries. Indeed, while there is a good deal of country-level work on many of these issues, firm-level analyses are only now beginning to emerge.

This paper has three main goals. First, it attempts to build a comprehensive empirical framework around the "investment climate" typology with firm-level data. That is, there has been much discussion of the investment climate, but as yet few comprehensive measures of it. Second, it demonstrates the necessity of having data at the firm-level, as opposed to more aggregated levels, to capture the impact of the investment climate on performance. Country-level, cross-country, empirical analyses implicitly assume that each investment climate measure has the same impact on each country when controlling for certain country characteristics. Such analyses are useful in that they can tell us what factors affect aggregated macro indicators on average. However, economies are heterogeneous and such aggregated analyses cannot tell us which factors may be important within different countries. Firm level data allows us to assess factors that comprise the investment climate on firms themselves. Finally, we use a new enterprise-level dataset covering 1500 Chinese enterprises in five cities to illustrate the above points, investigate the effects of various investment climate measures on firm performance, and highlight areas in which reforms may most improve firm performance in China.

Strong firm performance can itself be measured on different dimensions. Here, we address four: sales growth, investment rate, productivity and employment growth. After discussing some investment climate measures, the strategy of this paper is to analyze the data at increasingly disaggregated levels. We first present some aggregate city-level data. While such city-level aggregations already represent an improvement over country-level analyses, it will be clear that the aggregated numbers hide a great deal of variation at the firm level. We then move to an enterprise-level analysis to examine in more detail how the investment climate affects firm performance. The enterprise-level analysis itself has two components: first, we estimate the effects of *city-industry* investment climate variables on firm performance controlling for firm characteristics, and second, we estimate the effects of the firm-level variation in the investment climate itself.

At the most general level, the empirical results suggest that the biggest impacts on firm performance come from international integration, entry and exit, labor market issues, finance, and technology. Some infrastructure problems common in other developing countries such as

losses from electricity outages appeared to have little impact on Chinese firms, on average. The analysis also finds that controlling for firm characteristics and city and sector dummies:

- More foreign ownership is positively associated with sales, investment, and employment growth;
- Barriers to entry and exit are associated with lower productivity and sales and employment growth, while younger firms consistently perform better on all measures;
- Access to finance is correlated with higher sales growth, investment, and productivity;
- Increased labor market flexibility is associated with higher investment and productivity;
- Higher staff quality is associated with higher sales, investment, and productivity, and investment in worker training is correlated with faster sales growth and investment rate and possibly productivity;
- Access to information technologies and research and development are correlated with better outcomes;

While the results should be interpreted with caution – we discuss a number of caveats below – they highlight the importance and necessity of firm-level data in gathering information below country and even aggregate sub-national levels. In the sections below we first discuss our data and the survey that generated it. Second, we discuss in some detail various components of the investment climate and what the literature says about them so far. In this context we also present results from the survey aggregated up to the city level. These results show large differences in many measures across cities, with Shanghai and Guangzhou generally the leader, Tianjin and Chengdu the laggard. In some cases they also highlight the difficulty surveys face in gathering truthful information about sensitive issues. Third, we move to the firm-level analysis, which shows in more detail how these measures affect firm performance. Finally, using the firm-level results we assess the quantitative importance of various investment climate aspects.

China is a particularly interesting country in which to study the impact of differing investment climates across regions. Overall, China's growth performance has been impressive, but economic conditions vary across regions, with eastern and coastal areas generally having developed more quickly and attracted more investors than have mid- and western areas. Two broad factors help explain this phenomenon. The first is differences in natural endowments, such as access to ports. The second is the nature of decentralization of the Chinese economy and

policy making. For years, regional governments have been given different degrees of discretion in setting economic policy. Thus, some experimental provinces and cities were given greater freedom to choose more liberal policies to attract foreign capital. For instance, Guangdong has been at the forefront of pro-market reforms. Furthermore, the central and regional tax arrangements were negotiated province by province, giving regional governments different incentives for economic performance (Gordon and Li 2002). These differences have also given rise to strong regional protectionism (Poncet 2002), as carefully documented by the State Development Planning Commission (2000). Together, the differences in initial endowments, regional discretion in policy making, tax arrangements, as well as leadership turnover patterns have led to strong regional variations in the investment climate; differences that will be exploited in the analysis presented here.[2] To the extent that sub-national level analysis of investment climate is particularly important in countries that are large, decentralized and feature local discretion and non-integrated markets, China is an excellent country in which to conduct such an analysis.

Data and Investment Climate Measures

A good deal of work has by now gone into measuring aspects of the investment climate. These include, for example, measures of investment risks (the International Country Risk Guide from the PRS Group), transparency (Transparency International), competitiveness (The Global Competitiveness Report from the World Economic Forum), governance (e.g., in Kaufmann, et al. 1999; 2002), and regulatory burdens (Djankov, et al. 2002). Each of these indices has proven quite useful and informative. One notable feature, however, is that they are all at the country level. That is, each country receives one score for every indicator. Such indicators have limited potential in pinpointing obstacles to firm productivity and investment and are thus of limited use in contributing to specific policy advice.

More detailed analysis requires data at the firm, rather than the country, level. In order to uncover the effects of the investment climate on individual firms, the World Bank is conducting firm-level surveys in a number of developing and transition economies. An earlier World Bank initiative, the World Business Environment Survey (WBES), assessed manager's opinions on

[2] In this study the five regions included are among some of the stronger performers so that the differences would be

obstacles their firms faced. The interest it generated in using micro-data to analyze areas for reform helped stimulate the larger effort to collect more quantitative information that could allow for more rigorous assessments, larger sample sizes that could allow for sub-national inferences to be drawn, and means for measuring how the obstacles directly affected firm performance. That effort became the investment climate survey work, which is collecting detailed firm-level data in more than 20 countries.

In China, the investment climate (IC) survey was undertaken in collaboration with the Enterprise Survey Organization of the Chinese National Bureau of Statistics. The survey included 1500 firms—300 from each of five cities surveyed—and ten industries. The cities include Beijing, Chengdu, Guangzhou, Shaghai, and Tianjin. 998 firms are in manufacturing sectors while 502 are in services. Table 1 lists the specific sectors and the number of firms surveyed in each. The survey aimed at being as comprehensive as possible, collecting information on, for example, inputs and outputs, suppliers and customers, finances, interactions with the government, labor market issues, technology, infrastructure, and corruption. Moreover, rather than just asking managers for their opinions on certain issues, the survey collected factual information, providing more objective, quantitative measures of the investment climate. Thus, for example, rather than asking managers to gauge on a scale of 1 to 6 the quality of the power supply as an obstacle to conducting business, they report the number of outages and the value of the production lost due to inconsistencies in the power supply.

The investment climate is comprised of many factors, as discussed above. These include sound and stable macroeconomic policies, which are not our focus in this paper as those are truly macro, rather than micro, level indicators and as such will not vary across our sample.[3] We can narrow the categories beyond the general ones listed above to include the extent of international integration; private sector participation; entry, exit, and other administrative barriers, labor market flexibility, physical infrastructure, skills and technology endowment, and functioning of financial markets.

International Integration

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even starker should less industrialized or integrated regions be included in the comparison.

A good deal of research suggests that countries that are more integrated into the global economy grow more quickly (see, for example, Maloney 2001; Sachs and Warner 1995). Integration and openness can take the form of import competition, production intended for export, foreign direct investment, and foreign ownership. Integration can boost productivity by increasing the degree of competition and forcing producers to be more efficient and more innovative. Integration also encourages the flow of ideas and managerial know-how to domestic firms. Studies that look at firm responses to reduced trade tariffs document a resulting improvement in productivity, with those facing import competition being the most likely to invest as a result of the policy change (Levinsohn 1993; Pavcnik 2000). Improved access to inputs and capital equipment can boost productivity, and the prospect of serving larger markets through exports can improve scale economies and affect firms' decisions regarding investment, training, technology and the quality of inputs -- all steps associated with higher productivity (Hallward-Dreimeier, et al. 2002).

Import competition varies quite a bit across the five cities in our sample (Figure 1). Firms in Guangzhou report that, on average, imports account for more than 12 percent of the domestic market for their main product. Shanghai is a fairly distant second at just under nine percent, followed by Beijing at about eight percent, Tianjin at 7.4 percent. Chengdu was far behind the rest, with imports accounting for not quite six percent of domestic sales of those firms' main products.

Ownership

State-owned firms in developing countries were typically shielded from competition, inefficient, and often ended up receiving a constant flow of subsidies to stay afloat (World Bank 1995). A great deal of research has found that private firms are more efficient than state-owned firms, and that firm performance improves after privatization (Megginson and Netter 2001; Shirley and Walsh 2000). The difference between state-owned and private (or privatized) firms is most apparent in industries that are competitive in most of the world

Private foreign ownership is given particular attention as it is usually associated with higher productivity. Foreign firms often have access to superior technology, greater access to

[3] The China survey is one of the first completed under the new initiative. As the number of available country

export markets, and new management techniques. The foreign firms themselves may be more productive, and the possibility of spillovers through linkages and demonstration effects raises the possibility that the presence of foreign firms could benefit their suppliers and even their competitors. Finally, foreign owners tend to be large shareholders, who can internalize the costs of monitoring and tend to yield greater efforts in monitoring (Shleifer and Vishney, 1985). As a result, the CEO works harder, and firm performance improves. (See Saggi (2002) for an overview of the literature).

Figure 2 shows the share of foreign and state ownership of the firms in our sample by city. Government (including national, state/provincial, local/municipal, and others including cooperatives and collective enterprises) on average owned 22% of firms, and foreign investors 21%. This average, however, hides large variation across the cities. The figure shows that Guanzhou has the lowest share of government ownership and the highest share of foreign ownership. At the other extreme, Chengdu has the highest share of government ownership (at around 30 percent) and the lowest share of foreign ownership (at around five percent—one-seventh of Guangzhou's foreign ownership level).

Entry and Exit

The ease of firm entry and exit is an important determinant of productivity, investment, and entrepreneurship (e.g., Lansbury and Mayes 1996). Relatively easy entry and exit allows poorly performing firms to leave the market and dynamic new ones to enter. Unfortunately, many developing and transition governments fail to recognize that firm births and deaths are an inevitable corollary of entrepreneurial risk-taking, and instead erect a maze of administrative obstacles to starting, operating, and closing firms.

Entrepreneurship, especially, is an important contributor to economic growth and welfare improvements in transition and developing countries. New firms "have usually been the fastest-growing segment in transition countries" (McMillan and Woodruff 2002). The scale and effects of entry can be impressive—Deng Xiaoping expressed his surprise that "all sorts of enterprises boomed in the countryside, as if a strange army appeared suddenly from nowhere" less than a

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datasets grows, the role of different macroeconomic policies can be examined in cross-country comparisons.

decade after the first reforms in China in 1978 (Zhao 1996 as quoted in McMillan and Woodruff 2002).

A growing body of literature documents the difficulty entrepreneurs face in establishing firms in developing countries (e.g., Djankov, et al. 2002; Emery, et al. 2000; Friedman, et al. 2000). Djankov, et al. (2002) compiled data on entry regulations in 85 countries, and discovered enormous variation in the number of procedures required to start firms across countries, ranging from a low of two in Canada, to as many as 21 in the Dominican Republic (with Bolivia and Russia a close second at 20). The time required to establish a firm ranged from two to 152 business days (in Madagascar). These procedures can be extremely costly to the economy—the cost of official procedures (that is, not including bribes) for setting up a new business was 266 percent of per capita income in Bolivia. They find that stricter regulation of entry is correlated with more corruption and a larger informal economy. Likewise, Emery et al. (2000) found that in Africa, "when added together, this whole maze of often duplicative, complex, and non-transparent procedures can mean delays of up to two years to get investments approved and operational."

One of the difficulties with surveys done over a relatively short period of time is that it is not possible to measure entry and exit. Moreover, there is a serious truncation problem since firms that have exited are, tautologically, no longer around to be surveyed. Nonetheless, two questions in the China survey are potential proxies for entry and exit: excess capacity and the share of a firm's costs used to subcontract other firms (Figure 3).[4]

The first measure of entry and exit barriers is excess capacity. Firms often operate with some excess capacity given adjustment costs and lumpiness of certain investments. Nonetheless, very high levels of excess capacity can indicate that unproductive firms are not exiting the market, simultaneously blocking entry by new firms. In the survey, manufacturing firms were asked to provide their capacity utilization from 1997-2000, which, inversely, yields excess capacity. The figure reveals that firms in Chengdu have the highest level of excess capacity, while Guangzhou and Shanghai have the lowest.

[4] One additional possible measure of entry and exit is market share, which the survey also collects. The problem with this indicator is that it is very difficult to interpret. Increased concentration (as indicated in higher market share for a give firm) may indicate a lack of competition. On the other hand, productive and efficient firms are also likely to increase their market share and thus industry concentration. A great deal of literature on this question was rarely able to reach consensus on which effect is likely to dominate (Bresnahan 1989).

The second measure is the share of the firm's cost used for subcontracting. Subcontracting may be indicative of entry and exit barriers in two ways: in a more flexible market any given firm may have less reason to keep all activities in-house, while the availability of subcontractors could indicate ease of entry and extent of firm specialization. In this case Figure 3 shows that Shanghai has the highest level of subcontracting, while Chengdu has the lowest.

Regulatory and Administrative Barriers to Firm Operation

In addition to the rather large steps of opening or closing a business, firms also deal with regulatory and administrative issues that affect day-to-day operations. Friedman, et al. (2000) compile indices of taxation levels and "over-regulation" (essentially, indices of the business environment) of firms in 69 countries. While they find no evidence that higher tax rates drive firms underground, "...every available measure of over-regulation is significantly correlated with the share of the unofficial economy and the sign of the relationship is unambiguous: more over-regulation is correlated with a larger unofficial economy" (Friedman, et al. 2000). In other words, while higher tax *rates* did not seem to drive away investors, the myriad array of obstacles to starting and running a business do.

Many of these barriers are also associated with corruption, as they often involve payments to inspectors who visit the firm or to officials who grant operating permits. Corruption comes in other forms as well. When infrastructure is poor, bribes are often required to get telephone or electricity connections. Corruption can easily deter foreign and domestic investors. Recent empirical research confirms that measures of corruption are significantly and negatively related to FDI inflows (e.g., Smarzynska and Wei 2000; Wei 2000).[5]

The survey makes several attempts to uncover information about administrative hassles and corruption. As one might expect, questions on these topics are the ones firms are

[5] This discussion should not be interpreted as implying that regulations in developing countries are only onerous and unnecessary. On the contrary, many regulations and regulatory agencies can be important for mitigating market failures (e.g,., environmental problems), protecting consumers (e.g., against firms that can exercise market power), and ensuring safe working conditions. The issue is that regulations in developing countries tend to be more complex and bureaucratic than necessary, are associated with corruption, and often are not intended to correct market failures or protect consumers. Indeed, Djankov, et al. (2002) find that more regulations are generally not associated with better societal outcomes in developing countries.

least likely to answer, and most likely to not respond truthfully when they do answer (see Recanatini, et al. 2000 for a survey of the survey literature).

While few firms answered direct questions about side payments and bribes, many more firms answered indirect questions about red tape, bureaucratic hassle, and the potential need to pay bribes. Managers were asked how much time they spend with government officials dealing with business regulations. Firms also provided the number of days in a year that various inspectors visit their facilities. The results are reported in Figure 4. The reported numbers were somewhat surprising: managers in Beijing report spending the largest share of their time dealing with regulatory issues, while firms in Guanzhou receive the most frequent visitations from various government agency inspectors. Chengdu appears to have the least government interference of the five cities. However, two sets of possibilities may explain these results. First, government interference may be lower in Chengdu simply because firms invest less and take fewer risks, thus submitting fewer permit applications that bring government inspections. Second, and related, inspectors may be more likely to harass growing and more profitable firms, since there are more rents to extract from them.

However, another statistic sheds more light on government interference across cities. Figure 5 shows the share of firms refusing to disclose the time managers spend dealing with regulations. Firms in Chengdu were three times as likely to refuse to respond to these questions as in any other city.[6] Large refusal rates may indicate fear of consequences of responding to the question, indicating especially severe problems – particularly when these firms were willing to provide information on other virtually all other topics.

Regulations that have particularly strong impact on firms are those covering the labor market. Restrictions on firing, hiring seasonal or contract workers, and provision of certain benefits can affect firm productivity as it affects a firm's ability to adjust production to demand. Moreover, while restrictions on firing may benefit employees already hired (as long as the firm remains in business), they can end up as obstacles to growth by creating an incentive for firms to not hire additional permanent labor. In the face of such constraints, firms may seek to use temporary labor rather than new permanent workers. Non-permanent workers allow firms

[6] The share of firms that refuse to respond in Chengdu increases to 40 percent if we assume that a response of zero is equivalent to refusing to answer. The differences in response rates to the question of inspections was much less striking, so in the analysis we focus on the share of firms that were willing to respond to questions of interactions with officials and with the number of inspections.

flexibility to adjust to changing demand conditions. Figure 6 shows the average share of employment that is non-permanent by city. Chengdu has the smallest share of temporary workers at around 12 percent, while Guanzhou has the largest at 21 percent.

Quality and Availability of Physical and Technological Infrastructure

The quality and availability of infrastructure, including transportation, electricity, and communications, can have large impacts on firm productivity and growth potential, as well as on the likelihood that new firms will locate in an area. Indeed, much research has linked these to economic growth in developing countries (e.g., Canning 1999; Canning and Bennathan 2000; Easterly and Rebelo 1993).[7] China's physical infrastructure has undergone rapid improvements in the last decade. Compared to India, for example, power outages are rare and waits for phone lines (or mobile phones) practically nonexistent. Moreover, improvements in those areas continue (The World Bank 2002a).

Firms' access to information and computing technologies (ICTs) and their use may affect productivity and economic growth. Clarke (2002), for example, using enterprise-level data in Eastern European transition economies, finds that even controlling for endogeneity, firms that have Internet access are more likely to export than firms that do not.[8] Bhavani (2002) finds that use of technology is beneficial for firms in the Indian auto components industry. Moreover, ICTs—or, more accurately, involvement in ICT industries—have also been important in spurring regional economic growth in places such as Taiwan and Bangalore (Arora, et al. 2001; Athreye 2002; Saxenian and Hsu 2000). To compare the use of ICTs across cities in our sample, we construct a principal components index that consists of the share of a firm's employees that use computers, the number of telephones per employee, and the share of employees that use the Internet in their jobs. Figure 7 suggests that firms in Shanghai are the most ITC intensive, while firms in Chengdu are the least.

[7] It is not always clear, however, when public investment in infrastructure leads to economic growth. Under some conditions it may have large positive effects, under other conditions it crowds out private investment, and under other conditions—often when the investment was done for political reasons—has no effect at all.

[8] In a complementary paper, Clarke (2001) finds that foreign-owned firms are more likely to have Internet access. Moreover, he found evidence of spillovers from this access, with FDI increasing Internet access among domestic firms other than firm receiving the FDI.

Access to finance

Access to external finance can also affect growth and productivity. Businesses will invest in projects where the expected benefits exceed the costs. Efficient investment, however, can happen only when businesses do not face credit constraints unrelated to their own performance. Indeed, a great deal of research demonstrates the importance of well-developed financial markets for economic growth (see Caprio, et al. 2001 for an extensive summary). In general, countries with deeper financial systems tend to grow faster than countries with more shallow ones. Relatively few firms in China have access to formal finance than in other Asian countries (The World Bank 2002b). Approximately half of the firms in our sample have neither a bank loan or a loan from any other financial institution, and on average only about 20 percent of firms' working capital comes from bank loans.

To better measure firm access to external finance we construct a principal components index of formal capital use. The index is comprised of whether a firm has a bank loan, the number of banks a firm uses, whether the firm has an overdraft facility or line of credit, the share of loans denominated in a foreign currency, and the share of inputs the firm buys on credit from its suppliers. A disadvantage of this index is that by using it we cannot tease out different effects of different types of finance. On the other hand, the index has certain advantages. It captures not just the use of formal finance, but also the breadth of financial vehicles available to the firm. As a result, this helps us partly avoid the well-known problem of Chinese state-owned banks continuously providing loans to money-losing state-owned enterprises. This phenomenon could result in measures of a firm's ties to banks indicating poor performance. We believe that our index should be a good measure of both the depth and breadth of finance alternatives available to the firm. Figure 8 shows that, according to this index, Shaghai has the best access to external finance, Guangzhou second best, while Tianjin the worst.

Empirical Analysis

The city averages presented above provide some interesting comparisons, but still do not allow us to investigate the effects of particular investment climate measures on firm performance. This section attempts to more rigorously evaluate the effects. We use a simple reduced-form regression analysis, estimating several versions of equation (1).

(1) $y_{ics} = \beta_0 + \beta_1 *(\textbf{IC indicators}) + \beta_2 Z + \alpha_c + \alpha_s + \varepsilon_i$

The dependent variable is firm performance, for which we use four measures: sales growth, employment growth, investment rate, and total factor productivity (TFP).[9] Z is a vector of firm-level control variables likely to influence firm performance. These include initial sales, employment, the firm's age, and level of fixed assets in some specifications. We also control for city (α_c) and sector (α_s) fixed effects. ***IC indicators*** include our investment climate measures, which relate to the discussion above. More specifically, they include share of foreign and domestic ownership, the share of output produced for export, the share of imports for the domestic market in the firm's main product line, excess capacity, the share of costs subcontracted, share of labor that is nonpermanent, a staff quality index, the share of labor that receives formal training from the firm, a finance index, a research and development intensity index, an information and communication technology (ICT) index, the share of output lost as a result of power outages, the share of output lost through theft, the time (in days) spent dealing with government inspectors, and whether firms refuse to answer questions about senior management time with inspectors.

One of the difficult conceptual problems with the analysis is determining how exactly each investment climate factor is likely to affect the firm. For example, a firm may delay investments if it has substantial excess capacity. However, the total excess production capacity in a particular industry or market is also likely to influence a firm's investment decisions. In this case even a firm with very little excess capacity may be unlikely to invest if the industry as a whole has excess capacity. The implication of this observation is that some investment climate indicators may have different impacts at the firm and at more aggregated levels. Another reason for aggregate-level analysis is that some view the investment climate as similar for certain cluster of firms. To investigate this possibility, in one specification we estimate equation (1) only with city-sector averages of those variables to see whether that measure of market conditions affects the firm. After estimating the equation with the city-sector averages, we turn to an analysis using purely firm-level variables. Both analyses yield interesting results, but results from the firm-level variables seem more robust than those from the city-sector variables, further highlighting the need for firm-level data.

In addition to the above conceptual problem, the analysis faces some practical econometric obstacles: endogeneity, multicollinearity, and, in the pure firm-level analysis, missing observations. While we do not have perfect solutions to these problems, we recognize them and attempt to deal with them, as discussed below.

Endogeneity is a serious problem in investment climate analysis. The direction of causality is often not clear, and competing hypotheses can sometimes explain a particular result. Unfortunately, the large number of issues and variables we deal with in this paper make infeasible an instrumental variables approach to mitigating the endogeneity. Instead, we deal with this in a few ways. First, our city-sector IC variables are more likely to be exogenous to the firm, since any given firm only weakly affects the city-sector average. Second, the regressions include city and sector dummies which helps control for those more macro issues that affect both the IC variable and the firm. Third, in addition to the regressions that explore the IC variables one by one, estimating the equation with all variables together helps eliminate omitted variables problems, though at the cost of multicollinearity, as discussed below. And finally, we rely on common sense, openly discussing the competing explanations for results and which explanations seem to best fit all the evidence.

The multicollinearity problem, meaning that many of the variables in which we are interested are likely to be correlated with each other, can make it difficult to interpret results. The share of a firm's workforce that receives formal training, for example, is probably correlated with staff quality. Such correlations leave us needing to balance potential omitted variables bias if we leave out variables correlated with each other, with the multicollinearity problems when including all relevant variables.

The sample size problem arises from the fact that some data is missing for every firm. This is not a severe problem when we use the city-sector means as the relevant IC measure, as we simply calculate the means from all available firms. It is a much more severe problem in the purely firm-level analysis, since selecting only the observations that have complete information for all the IC variables reduces the sample size substantially. Indeed, including all the variables causes the sample size of 1500 firms to decrease by more than half.

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[9] To derive the TFP measure, we first estimate a Cobb-Douglas production function by each sector, allowing for firm fixed effects. The residual (including the fixed effects) is then TFP. Estimates based on the translog production function estimates are similar.

To deal with both multicollinearity and the sample size problem we run the regressions not only with all the variables included, but also with each IC variable by itself along with only minimal controls (initial sales, capital, or employment, depending on the dependent variable, firm age, and city and sector dummies). This practically eliminates the multicollinearity problem (though at the expense of potential omitted variables bias). Meanwhile, it allows us to retain a large sample size (1000 – 1300 firms) in the firm-level analysis.[10] This approach has the added benefit of being a robustness check: we have more confidence in the results when they are similar in regressions with all IC measures included and when only one IC measure at a time is included.

Aggregate city-sector investment climate measures

Many of the indicators measured here are affected by policy at the provincial level. The enforcement of national laws and regulations can vary across provinces, and local governments have substantial discretion in shaping the provincial investment climate. To analyze the importance of the investment climate at the local level and to capture the important differences between locations, we calculated city-sector averages for each of the investment climate indicators. As mentioned earlier, these measures also benefit from being clearly exogenous to a particular firm while capturing the environment in which the firm operates. To control for firm-specific characteristics, the analysis also includes firm age and initial conditions, while sector dummies control for industry-level effects. Since an observation in the regression is a firm, we can control for firm-specific characteristics while allowing the IC measures to vary across city-sectors (i.e., with five cities and ten sectors each IC variable has 50 different values).

We run individual regressions for each investment climate indicator as well as a more comprehensive specification in which we include all measures simultaneously. For the regressions looking at each IC variable individually, virtually all the coefficients were of the expected sign and most were significant (Table 2a to 2f).[11] The extent of corruption,

[10] Fortunately, the distribution of firms by city and sector remains quite close to the original distribution of 1500 firms.

[11] To check for the robustness of results, two additional sets of regressions were run. The first used averaged dependent variables to test if the investment climate indicators are significantly correlated with average performance. While variables entered significantly if individual indicators were included, there were few remaining significant results once all the variables were included. Given there were only 50 observations and so few remaining

infrastructure, innovation, degree of openness and the availability of finance yielded particularly strong results. While these variables exhibit variation at the firm level, they are also some of the most plausible candidates of variables whose regional variation should be more relevant in explaining firm behavior.

As noted above, one concern with asking about corruption directly is that firms have no incentive to answer truthfully, and may even be fearful of answering. The data reveal strong regional differences in the willingness to answer such questions. Given the likelihood that non-response was more likely to represent a higher rather than lower burden of corruption – we decided not to use the reported responses themselves. Rather, we argue that the share of firms willing to answer the question is itself a good proxy for the burden of corruption. Thus, we included the share of firms willing to answer a question about the time managers spend with officials. The measure is strongly negatively correlated with sales growth, investment and productivity (Table 2a). In other words, firms in city-sectors where firms are, on average, less willing to answer questions about corruption and government interactions tended to perform worse. A second variable we tested was the time spent in inspections. Here, the non-response issue was much more muted. However, the impact of the results are much smaller – and positively rather than negatively correlated with performance. Here the effect may be partly explained as firms that are expanding and innovating may require additional permits. This interpretation is consistent with the general finding reported above that firms in Chengdu—considered by many investors to have the worst corruption problems—shows the least time spent with inspectors while Guanzhou—one of the most dynamic cities—has the most. Indeed, an interaction of the time with regulators variable and a dummy for whether the firm introduced a new process or product the last three years captures the positive effect (the results unreported in this paper), with the direct measure of time in inspections losing its significance.

The share of sales lost in transit due to theft, breakage and spoilage in the city-sector is negatively correlated with firm performance (Table 2a). This variable captures not just the costs of production within a plant, but also costs associated with getting goods to customers. Again,

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degrees of freedom, the relatively weak results are not surprising. A second set of regressions included city dummies. The effect was to lower the significance of a number of variables, which again was to be expected as cities such as Shanghai and Guangzhou consistently score better on a variety of measures, while Chengdu often scores the lowest. The inclusion of city dummies is also somewhat problematic as the variation across cities is precisely what we are trying to explain in these aggregated location regressions.

while there is variation at the firm level, one would expect significant variations across locations. The effect is significantly negative, particularly for sales growth and productivity.

The availability of IT infrastructure in the city-sector is is positively correlated with performance (Table 2b). The greater the use of IT within a sector-location, the greater is sales growth, investment and productivity. Moreover, there is some evidence of spillover effects from regional innovation efforts. Average R&D activities and labor training practices in a city-sector are significantly positive for all performance measures. That they are concentrated differently across locations further demonstrates the importance in local variations in the investment climate to spur firms to improve their efficiency.

The openness of a location – to foreign owned firms and to competition from imports– is associated with higher sales growth, productivity and employment growth (Table 2c). The last result in particular is consistent with the hypothesis that foreign investors can be a source of spillovers for local firms. Access to finance is also particularly strongly associate with better performance at the regional level (Table 2d).

The results for entry and exit at the aggregate level are robust, but only for some dimensions of firm performance (Table 2e). Since a higher share of subcontracting (as a share of costs) implies more ease of entry, the share of subcontracting acts as a proxy for entry costs here. It is positively and statistically significantly associated with sales growth and productivity. As a proxy for exit barrier, higher excess capacity is associated with lower productivity. These pieces of evidence are consistent with the hypothesis that exit barriers reduce productivity.

Features of labor market exert substantial influences on firm performance (Table 2f). Higher staff quality is associated with a higher level of productivity. And firms that train more of their staff had higher sales growth, investment rate, job growth, and productivity. More overmanning in a city-sector is negatively correlated with a given firm's sales and productivity. Firms in city-sectors that feature higher share of non-permanent workers have higher investment rates.

Looking at each IC indicator separately demonstrates that many dimensions of the IC are important. However, it is more difficult to determine the relative importance of each dimension when looking at all the aggregate location variables together (Table 3): The multicollinearity of many of the variables means that the effect of each can not be precisely estimated when all the

city-sector IC measures are included simultaneously.[12] Within the larger regression, some coefficients are still statistically significant for some outcomes. A firm's import share is positively associated with employment growth. The share of firms refusing to answer questions on managerial time with regulators is still negatively associated with sales growth. Access to finance is still positively associated with productivity. More R&D outlays are positively, while share of sales lost from theft or breakage is negatively, associated with employment growth. The development of ICT is positively associated with productivity. The share of labor receiving training is positively associated with sales growth, investment rate and productivity. There are also some surprising results. For instance, firms in city-sectors that feature higher staff quality have lower employment growth. However, most importantly, a large number of variables lose their statistical significance even though they are of the expected signs. Looking at multiple location-specific averages limits the variation across variables, so the weakening of results in the larger regression is not surprising.

Having explored the possible use of the data at a semi-aggregated level, we next turn to a purely firm-level analysis. The following section details the approach and results which, in general, are much more robust than those an aggregated approach yields.

Firm-level analysis

The last section characterizes the investment climate at the city-industry level. However, the investment climate is likely to differ substantially below the city-industry level for a number of reasons. There could be district-level competition, for instance. Some districts might be designed to be a science parks or special economic zone districts; and economy of agglomeration might show up at the district level instead of the city-industry level. The quality of infrastructure and government effectiveness could differ at lower level than the city. Moreover, the enforcement of many laws could be at a more local level than the city level, leaving individual firms facing quite different types of government-business interaction within a city. All these considerations suggest that it might be fruitful to take advantage of the variations of the

[12] The specification in Table does not control for city dummies. However, our empirical experiments suggest that controlling for it makes little differences in our main qualitative results.

investment climate at the firm level. With these in mind, we turn to a detailed firm-level analysis.

As in the analysis above, we first estimate each IC variable by itself, along with minimal firm controls, and then estimate the equation with all IC variables included together. As one would expect given the larger sample size and the likelihood of multicollinearity, the IC variables are more likely to be significant when included without the other IC variables. Nonetheless, even with all IC variables included simultaneously, a large number of variables remain significant. Broadly speaking, the firm-level results are fairly robust, and are basically the same regardless of which variables are excluded or included. We discuss the results in some details below. While we present the results for each variable included independently (see Table 4), we base our discussion on the results when including all variables simultaneously (Table 5) and point out differences between the two approaches when there are any.

The control variables tend to be statistically significant and of the sign one would expect. Initial sales, capital, and employment are always negative and significant—not surprising since growth rates will be higher if the initial base is lower. More interesting is that, even controlling for initial conditions, younger firms have faster sales growth and investment and higher TFP than do older firms. It also appears that younger firms have faster employment growth, although age is significant in the employment growth regressions in the single-IC regressions but not with all IC variables included. Next we turn to the results on the IC variables.

International integration proves to be important (Table 4a), though not all indicators are significant. The share of the firm owned by foreigners was positively correlated with sales growth, employment growth, TFP, but not the investment rate. The share of the firms' output produced for export is significantly correlated with sales and employment growth when tested without other IC variables but not statistically significant when all other variables are included.[13]

The results in Table 4b reveal the importance of components of infrastructure and are consistent with conventional wisdom about current Chinese industrial development. Technology use, in particular, tends to be strongly correlated with performance. When all IC measures are included in the analysis, R&D is correlated with investment, TFP, and employment, while ICT

[13] The import share of the domestic market for the firm's main product was positively associated with TFP when the variable is included only with the control variables (Table 4a), but not significant with all other variables included. It was never significantly correlated with sales, investment, or employment growth. However, it should be noted

use sales, investment, and TFP. These two measures are, of course, highly correlated, which makes including both problematic. When examined individually, both the R&D and ICT use indices are positively associated with growth in sales, employment, investment, and TFP. In the individual IC regressions, both variables are positively and significantly associated with all performance measures. In other words, even controlling for sector, city, age, and baseline conditions, firms that do more R&D and use ICTs more intensively are more productive and grow more quickly.

The share of production lost to power outages is negatively correlated only with TFP when included without the other IC variables (Table 4b), and not significantly correlated with any outcome when other IC measures are included (Table 5). This result is consistent with recent efforts to make the electricity supply more reliable.

Labor quality and training tend to be positively correlated with firm performance (Table 4c and Table 5). The staff quality index is positively correlated with investment, TFP, and sales growth (when city are included). The quality index is significantly positively correlated with all performance measures in the individual IC regressions. The share of the firm's labor force that receives formal training from the firm is positively correlated with sales and investment, and also with TFP in the individual regressions.

The share of workers that are temporary (and seasonal) is positively and significantly correlated with investment and TFP. These results provide strong evidence that a more flexible labor force helps firms grow and become more productive. The analysis cannot determine if this is due to firms getting around particularly onerous regulations or if it reflects looser requirements that allow firms greater flexibility in using temporary workers, although anecdotes would point to the latter explanation. Despite the difficulty of precisely identifying what causes this result, the flexibility and training results together lead to a plausible conclusion: a flexible labor force is associated with more productive and faster growing firms, but firms' investment in their labor force pays off—firms that train more do better and firms with better workers do better.

The measurements of administrative hassles, as discussed earlier, need to be interpreted with caution. The firms' estimate of the total number of days spent dealing with regulatory is significantly associated with none of our dependent variables when all IC variables are included,

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that this variable is one that is most likely to suffer from imprecise measurement. Many managers—especially of small firms—may have had difficulty answering the question with any surety.

and only with sales growth in the individual regression (Table 4d)—and the sign is positive. There are at least two possible explanations for this seemingly strange result. First, firms that are growing may attract more attention from government officials. Second, firms with plans to grow may need new permits for expansion, thus necessitating additional meetings with regulatory agencies for the necessary permits. The dummy variable indicating refusal to answer the question about senior management time is negatively correlated with TFP, but nothing else.

The index of external finance is positively correlated with all four measures in the individual IC regressions (Table 4e), and with sales, investment, and TFP when all IC measures are included (Table 5). This result suggests that access to external finance is an important component of firm growth.

Finally, excess capacity is negatively correlated with sales and employment growth and TFP (Table 4f and Table 5). Significant excess capacity can be a barrier to entry. If the excess capacity arises because inefficient and unproductive firms remain in business through subsidies, new firms may never enter if they cannot compete with firms facing soft budget constraints. The extent to which a firm uses subcontractors is positively correlated with TFP.

What do the results imply?

It is difficult to synthesize these results—each IC variable could be the basis of an entire paper. Nonetheless, if we assume causality, they provide a base for us to estimate how the average firm may improve if certain elements of the investment climate were improved. In this section we use the significant coefficients from the analysis to simulate the effect on sales, employment, investment, and TFP of a one standard deviation improvement in the IC variable. In particular, we ask a simple question: how much would we expect the four outcomes to change when key IC indicators increase by one standard deviation? The one-standard-deviation change represents realistic advances firms and local governments can make to improve firm performance. To focus on the key factors, and to make sure that our point estimate is significant, we only focus on those factors that are statistically significant in that outcome regression. Table 6 reports the findings based on the specifications of Table 5.

Improving foreign integration would appear to have one of the largest impacts. A one standard-deviation change in the share of foreign ownership would increase sales growth by 7.9

percentage points, TFP by almost one-third, and employment growth by 7.1 percent. Decreasing excess capacity would increase sales growth by 6.3 percent, TFP by 17 percent, and employment growth by 3.5 percent. To the extent that excess capacity is caused by policies that prop up inefficient and money-losing firms, the analysis suggests that those policies are causing a serious drag on the performance of other firms.

Improvements in policies related to labor market could also have a large impact on performance. An increase in the share of temporary labor could increase sales growth by nearly three percent, investment by 2.1 percent, and TFP by 11.1 percent. One should be careful not to interpret this result too literally. It does not necessarily mean that more temporary workers, per se, are better, simply that a more flexible workforce is beneficial to firm growth. Indeed, higher staff quality and training also improve performance. A one standard deviation increase in the share of the labor force that receives formal training could yield an increase in sales growth of 4.7 percent and an increase in investment of 2.1 percent.

Increasing the access to external finance would also have positive impacts. A one standard deviation increase in our index would come with a 4.6 percent increase in sales, a 1.8 percent increase in investment, and a 10 percent increase in TFP.

Finally, technological upgrading could be beneficial. A one standard deviation increase in our R&D index would increase investment by 2.6 percent, TFP by 8.4 percent, and employment growth by 3.6 percent. The same relative increase in the ICT index, meanwhile, could bring an increase of 6.7 percent in sales growth, two percent in investment, and 36.3 percent in TFP.

These estimates should not be interpreted with caution. The calculations assume that the IC measures only affect firm performance, and not vice-versa. It is also unlikely that any of the variables actually operates completely independently—one may affect another in ways that our analysis cannot capture. Finally, even if one accepts the point estimates, they do not necessarily illuminate which policies would be effective and whether those policies would yield the predicted results.

Nevertheless, these simulations provide some evidence on the magnitude of the effects of the investment climate. It is perhaps more convincing to think of these simulations in the negative. Government policies to restrict foreign ownership are likely to have large negative impacts, as are policies that allow unviable firms to continue operations and exacerbate any

existing excess capacity problems. Thus, while we would not assert that our simulations provide definitive answers, they do demonstrate that many IC measures are important to the economy and suggest where policy initiatives could begin to focus.

Conclusion

The results of this analysis highlight both the importance of these investment climate indicators on firm performance and the necessity of firm level data for rigorously exploring their effects. Nonetheless, this analysis barely scratches the surface of what can be done with this sort of data. Each variable we discuss above relates to large bodies of literature and deserves much more attention.

The analysis finds that, overall, firm performance is positively correlated with foreign ownership, R&D, ICTs, staff quality, the share of the firm's labor force that receives training from the firm, and access to external finance. Excess capacity is negatively correlated with firm performance, while time spent with regulators is negatively correlated with TFP. These correlations tend to be obscured by more aggregated data, and are simply unobservable with country-level data. Constructing policies that can effectively promote growth requires firm-level data to truly understand bottlenecks to firm growth. While the results should be interpreted with caution, the analysis holds the promise of a great deal of additional research to uncover more details of each part of the investment climate discussed here.

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Figure 1
Imports' Share of domestic sales of firms' main product

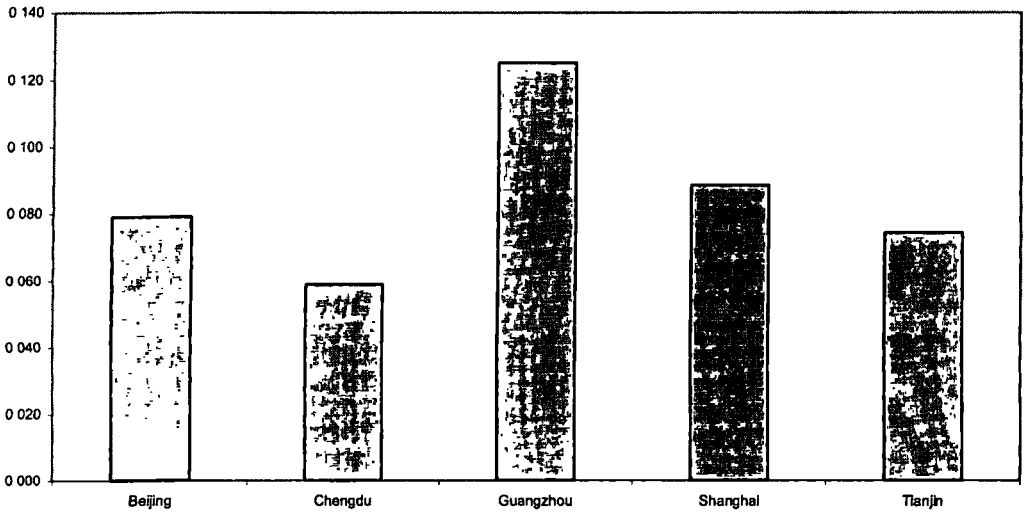

Figure 2
Firm Ownership

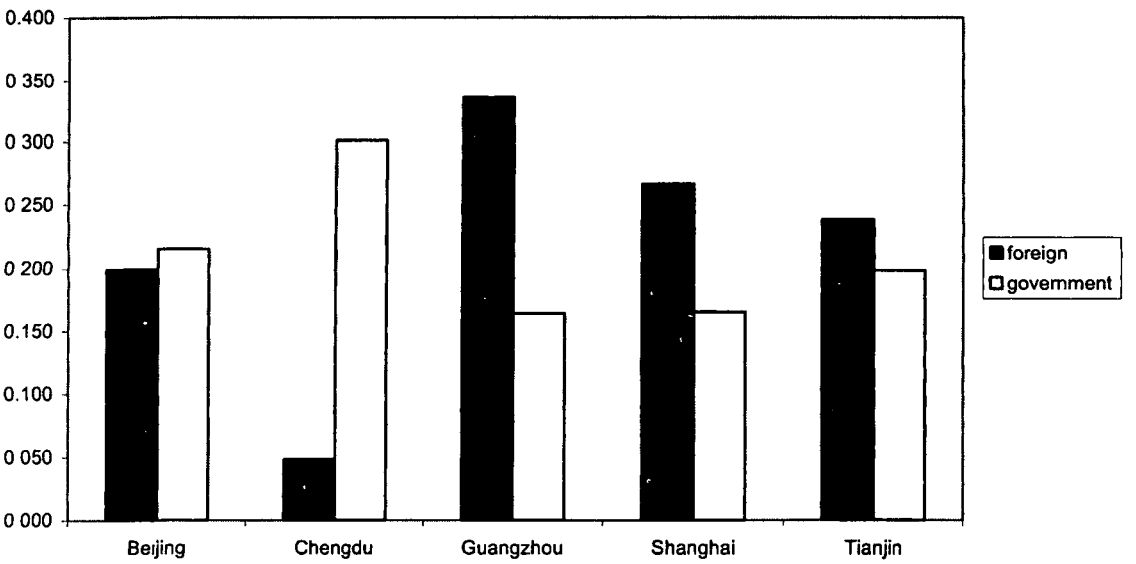

Figure 3
Excess Capacity and Subcontracting

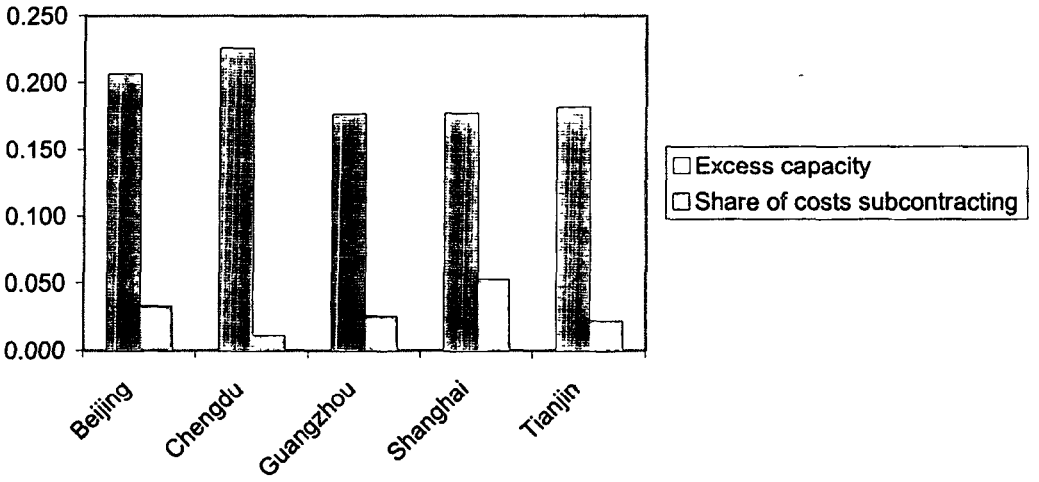

Figure 4
Time spent with regulators

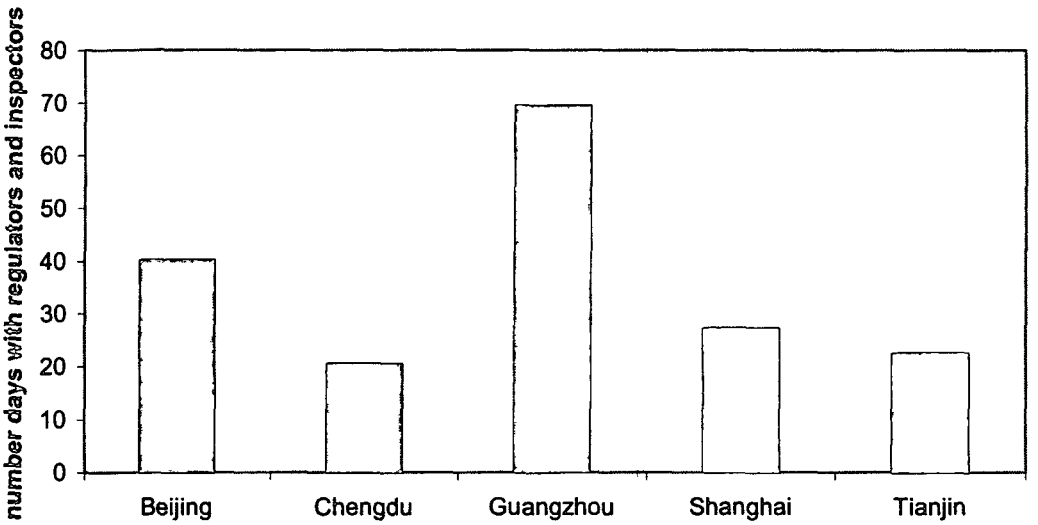

Figure 5
Share of firms refusing to respond to regulation questions

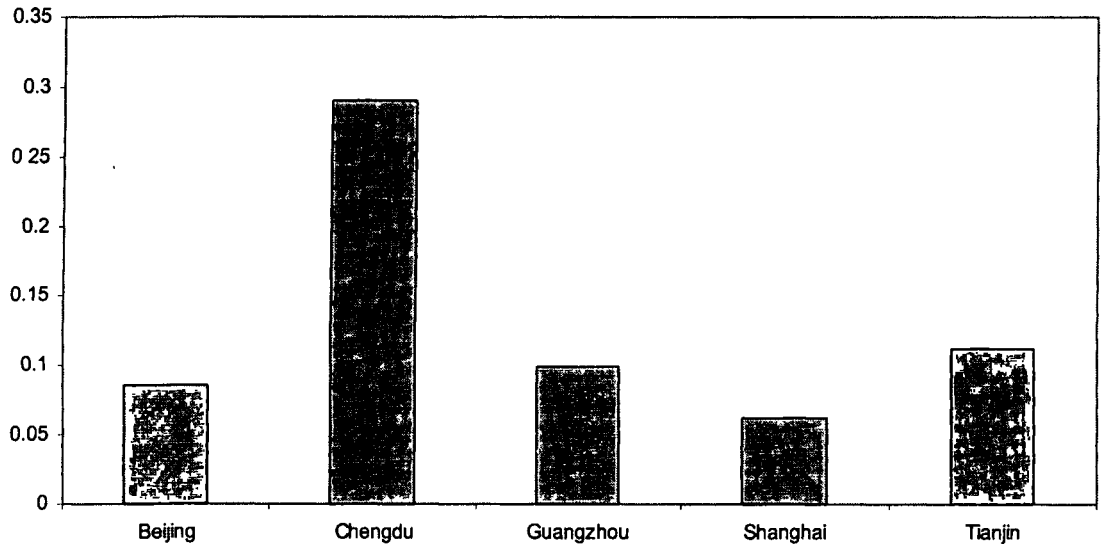

Figure 6
Share of workforce that is nonpermanent

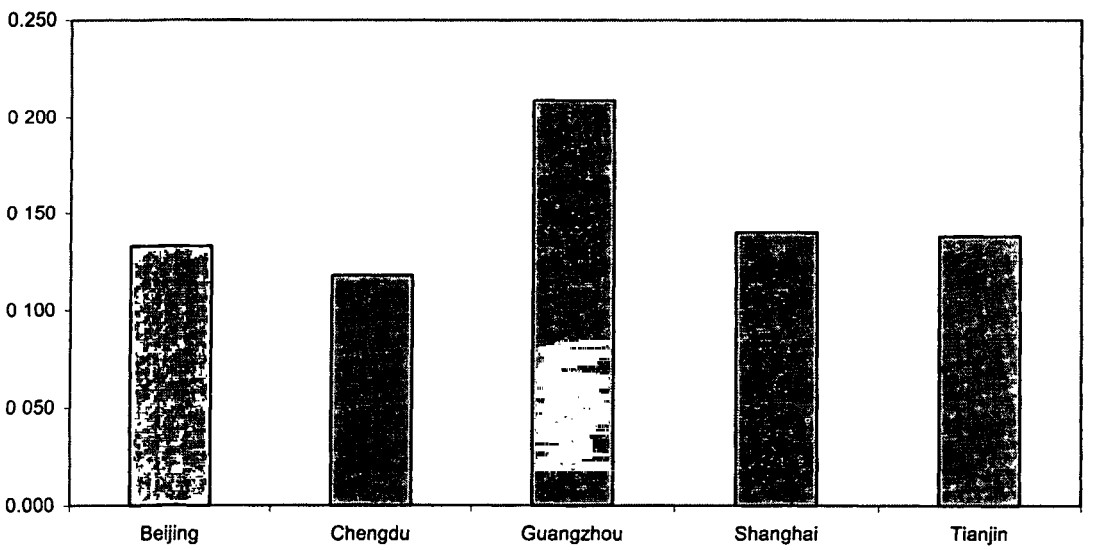

Figure 7
Information & Communications Technology Use

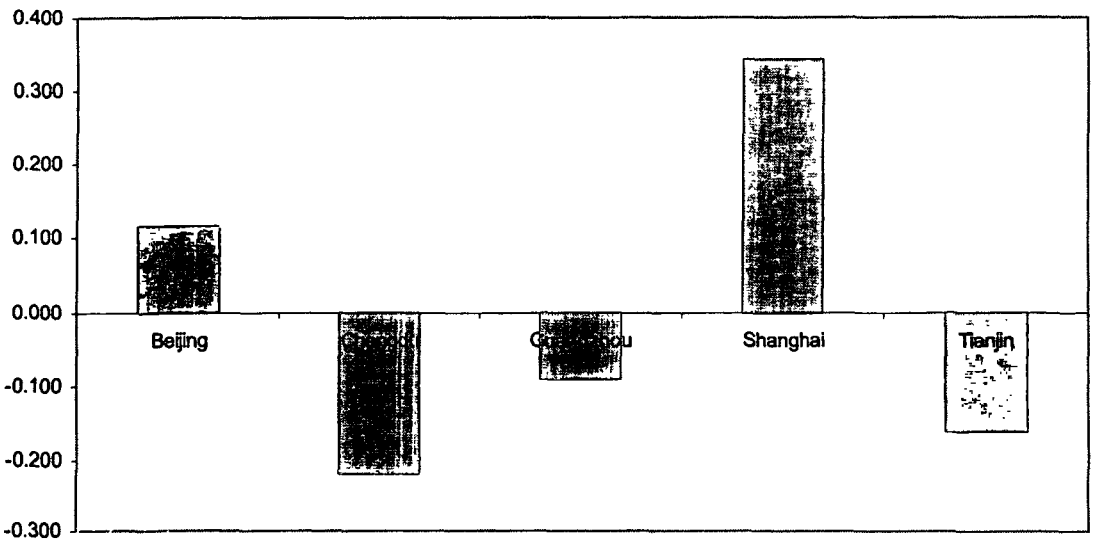

Figure 8
Formal Finance Index

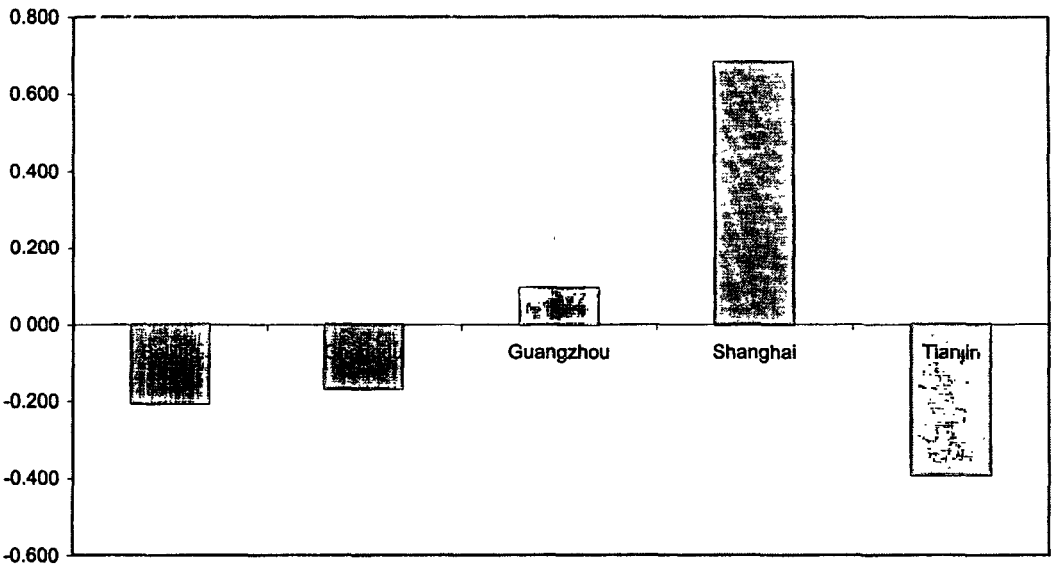

Table 1. Distribution of the Sample by Industry

Sector	Number firms
accounting and related services	104
advertising and marketing	89
apparel and leather goods	222
business logistics services	110
communication services	71
consumer products	165
electronic components	203
electronic equipment	192
information technology services	128
vehicles and vehicle parts	216
TOTAL	1500

Table 2a. City-Sector Investment Climate Measures and Firm Performance: Administrative Barriers and Corruption

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
Share of firms refusing to answer managers' time with regulators	-0.248	-0.122	0.701	-0.080								
	(2.31)**	(2.50)**	(2.04)**	(0.56)								
Time with regulators/inspectors					0.005	0.002	0.021	0.003				
					(3.34)***	(3 37)***	(4.73)***	(2.13)**				
share of sales lost from theft or breakage									-0.897	-0.276	-3.744	-0.673
									(2.30)**	(1.56)	(3.14)***	(1.24)
log(initial sales)	-0.042				-0.045				-0.044			
	(6.69)***				(7.20)***				(6.91)***			
log(initial capital)		-0.009				-0.010				-0.010		
		(3.67)***				(3.97)***				(3.82)***		
log(labor)			0.002				-0.014				-0.009	
			(0.06)				(0.53)				(0.32)	
log(initial labor)				-0.052				-0.053				-0.052
				(3.52)***				(3.51)***				(3.46)***
log(firm age)	-0.145	-0.051	-0.370	-0.093	-0.144	-0.050	-0.379	-0.093	-0.143	-0.050	-0.368	-0.092
	(11.25)***	(9.54)***	(10.37)***	(5.71)***	(11.26)***	(9.36)***	(10.78)***	(5.69)***	(11.11)***	(9.30)***	(10.38)***	(5.62)***
Constant	0.960	0.383	2.298	0.511	0.721	0.262	2.328	0.393	0.850	0.318	2.955	0.489
	(9.96)***	(8.97)***	(7.96)***	(5.26)***	(10.07)***	(9.05)***	(11.20)***	(6.79)***	(11.80)***	(10.97)***	(16.45)***	(6.28)***
Observations	1294	1274	1333	1309	1294	1274	1333	1309				
R-squared	0.20	0.17	0.63	0.10	0.20	0.18	0.63	0.10				

Note. *, **, *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.
The investment climate variables are city-industry averages; controls at the firm level are initial sales, capital, labor, and firm age.

Table 2.b. City-Sector Investment Climate Measures And Firm Performance: Physical And Technological Infrastructure

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
ICT index	0.147	0.035	0.765	0.153								
	(3.90)***	(2.12)**	(7.63)***	(1.33)								
R&D index					0 094	0.042	0.448	0.123				
					(3.43)***	(3.34)***	(5.58)***	(2.21)**				
share sales lost from electricity outages									-0.269	-0.360	-1.903	-1.483
									(0.36)	(0.91)	(0.74)	(1.54)
log(initial sales)	-0.047				-0.045				-0.042			
	(7.43)***				(7.16)***				(6.74)***			
log(initial capital)		-0.010				-0.011				-0.009		
		(3.97)***				(4.16)***				(3.65)***		
log(labor)			-0.027				-0.028				-0.001	
			(0.99)				(1.02)				(0.05)	
log(initial labor)				-0.056				-0.056				-0.051
				(3.36)***				(3.53)***				(3.49)***
log(firm age)	-0.140	-0.049	-0.350	-0.089	-0.144	-0.050	-0.367	-0.093	-0.143	-0.050	-0.371	-0.092
	(10.88)***	(9.17)***	(9.97)***	(5.19)***	(11.23)***	(9.37)***	(10.43)***	(5.66)***	(11.09)***	(9.27)***	(10.41)***	(5.63)***
Constant	0.696	0.274	2.122	0.328	0.868	0.333	3.094	0.536	0.809	0.317	2.854	0.510
	(9.76)***	(8.97)***	(11.05)***	(3.53)***	(12.50)***	(11.44)***	(17.13)***	(6.47)***	(10.31)***	(9.65)***	(13.95)***	(6.09)***
Observations	1294	1274	1333	1309	1294	1274	1333	1309	1294	1274	1333	1309
R-squared	0.20	0.17	0.64	0.11	0.20	0.18	0.63	0.11	0.19	0.17	0.63	0.10

Note. *, **, *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.
The investment climate variables are city-industry averages; controls at the firm level are initial sales, capital, labor, and firm age.

Table 2c. City-Sector Investment Climate Measures and Firm Performance: International Integration and Ownership

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
Share foreign ownership	0.216	-0.060	0.742	0.297								
	(1.87)*	(1.15)	(1.95)*	(2.26)**								
Share domestic private ownership	0.219	-0.089	-0.062	0.233								
	(1.35)	(1.25)	(0.12)	(1.33)								
Imports as share of domestic market					0.010	0.002	0.033	0.014				
					(2.81)***	(1.12)	(3.13)***	(3.10)***				
Exports as share of sales									0.047	-0.036	0.208	0.074
									(0.64)	(1.28)	(1.09)	(1.37)
log(initial sales)	-0.043				-0.044				-0.042			
	(6.89)***				(6.99)***				(6.76)***			
log(intial capital)		-0.009				-0.009				-0.009		
		(3 56)***				(3.73)***				(3 63)***		
log(labor)			-0.006				-0.008				-0.003	
			(0.22)				(0.29)				(0.10)	
log(initial labor)				-0.053				-0.054				-0.052
				(3.50)***				(3.62)***				(3.50)***
log(firm age)	-0.140	-0.051	-0.357	-0.087	-0.139	-0.049	-0.361	-0.086	-0.142	-0.051	-0.367	-0.090
	(10.71)***	(9.36)***	(9.80)***	(5.29)***	(10.84)***	(9.11)***	(10.10)***	(5.58)***	(10.96)***	(9.31)***	(10.11)***	(5.43)***
Constant	0.611	0.379	2.746	0.244	0.784	0.300	2.706	0.425	0.797	0.306	2.758	0.454
	(4.13)***	(5.83)***	(6.04)***	(1.78)*	(11.88)***	(10.89)***	(15.97)***	(7.54)***	(11.99)***	(11.13)***	(16.12)***	(7.42)***
Observations	1294	1274	1333	1309	1294	1274	1333	1309	1294	1274	1333	1309
R-squared	0.20	0.17	0.63	0.10	0.20	0.17	0.63	0.11	0.19	0 17	0.63	0.10

Note. *, **, *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.
The investment climate variables are city-industry averages; controls at the firm level are initial sales, capital, labor, and firm age.

Table 2.d. City-Sector Investment Climate Measures And Firm Performance: Finance

	Sales growth	Investment rate	TFP	Employment growth
finance index	0.084	0.016	0.543	0.087
	(3.35)***	(1.61)	(7.78)***	(1.94)*
log(initial sales)	-0.047			
	(7.20)***			
log(initial capital)		-0.010		
		(3.95)***		
log(labor)			-0.036	
			(1.33)	
log(initial labor)				-0.056
				(3.51)***
log(firm age)	-0.138	-0.049	-0.339	-0.088
	(10.65)***	(9.09)***	(9.70)***	(5.51)***
Constant	0.910	0.322	3.355	0.551
	(11.92)***	(10.98)***	(18.76)***	(5.70)***
Observations	1294	1274	1333	1309
R-squared	0.20	0.17	0.64	0.11

Note. *, **, *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.
The investment climate variables are city-industry averages; controls at the firm level are initial sales, capital, labor, and firm age.

Table 2e. City-Sector Investment Climate Measures and Firm Performance: Entry and Exit

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
Contracting as share of costs	1.034	0.145	6.451	0.404				
	(2.07)**	(0.70)	(4.41)***	(0.69)				
Excess capacity					0.450	0.283	-1.955	0.040
					(1.50)	(2.52)**	(2.29)**	(0.14)
log(initial sales)	-0.044				-0.042			
	(7.03)***				(6.68)***			
log(initial capital)		-0.009				-0.009		
		(3.73)***				(3.64)***		
log(labor)			-0.012				-0.002	
			(0.45)				(0.07)	
log(initial labor)				-0.052				-0.051
				(3.49)***				(3.50)***
log(firm age)	-0.142	-0.050	-0.362	-0.092	-0.145	-0.051	-0.364	-0.093
	(11.06)***	(9.27)***	(10.21)***	(5.63)***	(11.26)***	(9.40)***	(10.06)***	(5.80)***
Constant	0.804	0.303	2.742	0.456	0.800	0.306	2.756	0.458
	(12.13)***	(11.05)***	(16.29)***	(7.46)***	(12.04)***	(11.15)***	(16.14)***	(7.37)***
Observations	1294	1274	1333	1309	1294	1274	1333	1309
R-squared	0.20	0.17	0.63	0.10	0.19	0.17	0.63	0.10

Note. *, **, *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.
The investment climate variables are city-industry averages; controls at the firm level are initial sales, capital, labor, and firm age.

Table 2f. City-Sector Investment Climate Measures and Firm Performance: Labor

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
Panel A:								
Staff quality index	0.055	0.024	0.697	0.042				
	(1.05)	(1.19)	(5.21)***	(0.44)				
Share of labor that receives formal training					0.337	0.109	1.097	0.274
					(4.55)***	(3.70)***	(5.34)***	(3.99)***
log(initial sales)	-0.043				-0.049			
	(6.80)***				(7.56)***			
log(initial capital)		-0.009				-0.011		
		(3.71)***				(4.31)***		
log(labor)			-0.006				-0.029	
			(0.22)				(1.06)	
log(initial labor)				-0.051				-0.058
				(3.49)***				(3.75)***
Observations	1294	1274	1333	1309	1294	1274	1333	1309
R-squared	0.19	0.17	0.63	0.10	0.21	0.18	0.63	0.11
Panel B:								
Overmanning	-0.485	0.062	-1.975	-0.312				
	(1.69)*	(0.49)	(2.23)**	(1.04)				
Share of nonpermanent					0.201	0.164	0.261	0.349
workers					(1.06)	(2.08)**	(0.48)	(1.46)
log(initial sales)	-0.042				-0.042			
	(6.77)***				(6.81)***			
log(initial capital)		-0.009				-0.009		
		(3.66)***				(3.68)***		
log(labor)			-0.002				-0.002	
			(0.06)				(0.07)	
log(initial labor)				-0.051				-0.051
				(3.50)***				(3.51)***
Observations	1294	1274	1333	1309	1294	1274	1333	1309
R-squared	0.20	0.17	0.63	0.10	0.19	0.17	0.63	0.10

Note. *, **, *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included. The coefficients for the intercept and firm age are suppressed. The results on firm age remain very similar to those in other tables.
The investment climate variables are city-industry averages; controls at the firm level are initial sales, capital, labor, and firm age.

Table 3. City-Sector Investment Climate Measures and Firm Performance

		Sales growth	Investment rate	TFP	Employment growth
city-sector averages	Imports as share of domestic market	0.003	0.002	-0.005	0.014
		(0.63)	(0.91)	(0.30)	(2.37)**
	Share foreign ownership	0.179	-0.148	-1.147	0.026
		(0.80)	(1.26)	(1.45)	(0.08)
	Contracting as share of costs	0.780	-0.222	1.799	-0.701
		(1.17)	(0.75)	(0.92)	(0.72)
	Excess capacity	0.689	0.200	-0.246	0.206
		(1.43)	(1.00)	(0.16)	(0.31)
	Share of nonpermanent workers	0.122	0.210	-0.669	0.503
		(0.46)	(1.62)	(0.73)	(1.27)
	Time with regulators/inspectors	0.005	0.003	0.002	0.003
		(2.29)**	(2.56)**	(0.23)	(1.08)
	Share of firms refusing to answer managers' time with regulators	-0.298	-0.107	0.098	-0.003
		(1.90)*	(1.32)	(0.21)	(0.02)
	finance index	0.022	0.012	0.354	0.017
		(0.57)	(0.78)	(2.97)***	(0.30)
	Staff quality index	-0.020	-0.038	-0.055	-0.158
		(0.22)	(1.14)	(0.21)	(2.14)**
	R&D index	0.009	0.008	0.108	0.143
		(0.20)	(0.33)	(0.72)	(1.97)**
	Share domestic private ownership	0.084	-0.102	-0.743	0.115
		(0.36)	(0.86)	(0.97)	(0.31)
	share of sales lost from theft or breakage	-0.076	-0.164	0.576	0.127
		(0.13)	(0.61)	(0.31)	(0.22)
	share sales lost from electricity outages	-1.597	-0.863	0.415	-3.488
		(1.19)	(1.27)	(0.09)	(2.22)**
	ICT index	0.077	0.030	0.355	0.099
		(1.32)	(1.02)	(2.02)**	(0.66)
	firm exports as share of sales	0.153	0.011	0.134	0.179
		(3.96)***	(0.73)	(1.21)	(2.73)***
	share of labor receiving training	0.137	0.048	0.356	0.000
		(5.30)***	(4.37)***	(4.79)***	(0.01)

Table 3. City-Sector Investment Climate Measures and Firm Performance (Cont'd)

		Sales growth	Investment rate	TFP	Employment growth
firm level	log(firm age)	-0.121	-0 046	-0.307	-0.068
		(9.11)***	(8.53)***	(8.02)***	(4.84)***
	share capital leveraged	0.118	0.021	-0.071	0.061
		(2.88)***	(1.19)	(0.55)	(1.16)
	log(initial sales)	-0.056			
		(8.12)***			
	log(initial capital)		-0.013		
			(4.80)***		
	log(labor)			-0.072	
				(2.52)**	
	log(initial labor)				-0.074
					(3.89)***
	border	0.028	0.006	-0.170	0.056
		(1.16)	(0.46)	(1.86)*	(1.55)
	Constant	0.697	0.459	4.148	0.451
		(2.03)**	(2.53)**	(3.69)***	(0.87)
	Observations	1181	1165	1224	1193
	R-squared	0.25	0.23	0.67	0.14

Note. *, **, *** represent statistical significance at the 10, 5 and 1 percent levels. Industry dummies included.

Table 4.a. Firm-Level Analysis:

International Integration

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
Share foreign ownership	0.140	0.002	0.813	0.102								
	(3.25)***	(0.11)	(6.54)***	(2.07)**								
Share domestic private ownership	-0.054	-0.003	0.311	-0.009								
	(1.76)*	(0 24)	(3.24)***	(0.25)								
Imports as share of domestic market					0.084	0.026	0.435	0.101				
					(1.13)	(0.84)	(2.04)**	(1.62)				
Exports as share of sales									0.130	-0.000	0.058	0.143
									(3.50)***	(0.02)	(0.52)	(3.41)***
log(initial sales)	-0.033				-0.034				-0.028			
	(5.58)***				(5.19)***				(4.80)***			
log(initial capital)		-0.027				-0.032				-0.027		
		(8.40)***				(9.04)***				(8.45)***		
log(labor)			-0.041				-0.033				-0.047	
			(1.63)				(1.21)				(1.82)*	
log(initial labor)				-0.058				-0.043				-0.062
				(5.82)***				(5.55)***				(6.45)***
log(firm age)	-0.132	-0.073	-0.270	-0.082	-0.148	-0.070	-0.330	-0.084	-0.132	-0.070	-0.355	-0.072
	(9.12)***	(13.04)***	(7.26)***	(4.73)***	(10.30)***	(12.64)***	(8.56)***	(6.73)***	(10.00)***	(13.55)***	(9.83)***	(4.56)***
Constant	0.633	0.305	2.568	0.466	0.626	0.338	2.861	0.342	0.700	0.353	3.146	0.500
	(8.49)***	(10.91)***	(10.42)***	(5.51)***	(8.72)***	(12.75)***	(11.67)***	(6.56)***	(9.59)***	(14.31)***	(14.01)***	(7.21)***
Observations	1220	1298	1263	1235	1036	1093	1062	1043	1188	1261	1231	1200
R-squared	0.17	0.25	0.66	0.13	0.17	0.26	0.66	0.16	0.15	0.24	0.65	0.13

Note. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.

Table 4.b. Firm-Level Analysis: Infrastructure and Technology

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
ICT index	0.064	0.031	0.375	0.029								
	(5.28)***	(5.86)***	(10.70)***	(2.14)**								
R&D index					0.019	0.031	0.192	0.041				
					(1.82)*	(7.38)***	(6.36)***	(3.35)***				
share sales lost from electricity outages									0.057	0.017	-0 851	0.246
									(0.35)	(0.25)	(1.69)*	(1.30)
log (initial sales)	-0.034				-0.035				-0.027			
	(5.52)***				(5.45)***				(4.50)***			
log (initial capital)		-0.031				-0.030				-0.027		
		(9.62)***				(9.62)***				(8.61)***		
log (initiial labor)				-0.059				-0.066				-0.055
				(5 98)***				(6 19)***				(5.59)***
log (labor)			-0.047				-0.087				-0.041	
			(1.84)*				(3.20)***				(1.63)	
log (firm age)	-0 126	-0.065	-0.286	-0.077	-0.142	-0.072	-0.339	-0.083	-0.145	-0.073	-0.352	-0.093
	(9.29)***	(12.43)***	(8.03)***	(4.78)***	(10.47)***	(13.94)***	(9.45)***	(5.03)***	(11.03)***	(14.30)***	(10.01)***	(5.82)***
Constant	0.645	0.344	2.784	0.505	0.792	0.322	3.663	0.434	0.588	0.301	2.657	0.463
	(8.50)***	(13.60)***	(12.49)***	(6.92)***	(9.91)***	(13.19)***	(16.01)***	(6.06)***	(8.77)***	(12.49)***	(12.55)***	(6.36)***
Observations	1149	1227	1190	1162	1141	1219	1185	1154	1222	1300	1265	1237
R-squared	0.17	0.26	0.68	0.12	0.17	0.29	0.67	0.13	0.15	0 25	0.65	0 12

Note. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.

Table 4.c. Firm-Level Analysis: Labor

	Sales growth	Investment rate	TFP	Employ. growth	Sales growth	Investment rate	TFP	Employ. growth	Sales growth	Investment rate	TFP	Employ growth	Sales growth	Investment rate	TFP	Employ. growth
Share of non-permanent workers	0 075	0.044	0.21	0 023												
	(1 59)	(2 25)**	(1.52)	(0 44)												
Staff quality index					0 056	0 036	0.32	0 03								
					(4 69)***	(7 45)***	(9 76)***	(2.04)**								
Share of labor that receives training									0.108	0 06	0 298	-0.012				
									(4 46)***	(5.81)***	(4.23)***	-0 42				
Overmanning													-0.207	-0 075	-0.453	-0.072
													(2 84)***	(2.50)**	(2 08)**	(0.90)
log(initial capital)		-0 026				-0 035				-0.033				-0 029		
		(8.27)***				(9 50)***				(9.65)***				(8.83)***		
log(labor)			-0.04				-0 047				-0.053				-0 055	
			-1 55				(1.69)*				(1 93)*				(2.06)**	
log(initial labor)				-0.056				-0 07				-0 061				-0.057
				(5.84)***				(5 75)***				(5 37)***				(5.60)***
log(initial sales)	-0 025				-0 043				-0.035				-0 026			
	(4.23)***				(6 20)***				(5.32)***				(4 11)***			
log(firm age)	-0.136	-0.069	-0 353	-0 081	-0.129	-0 058	-0 274	-0.084	-0 13	-0.065	-0.3	-0.087	-0.128	-0.066	-0.305	-0.084
	(10.19)***	(13.28)***	(9.81)***	(5.14)***	(8.70)***	(10 19)***	(7 32)***	(4.35)***	(9 04)***	(11.53)***	(7.86)***	(4.72)***	(8.99)***	(11.82)***	(8 09)***	(4.98)***
Constant	0.698	0.346	3.094	0.522	0.53	0.169	2.152	0.331	0 702	0.285	2.882	0.584	0.533	0.303	2 617	0 467
	(9.37)***	(13 93)***	(13 61)***	(7 38)***	(5.42)***	(4 61)***	(6 68)***	(2.92)***	(8.69)***	(10.14)***	(11 94)***	(7.10)***	(7.62)***	(12 18)***	(12 37)***	(6.34)***
Observations	1188	1261	1231	1200	953	1009	1015	961	1030	1097	1069	1041	1075	1145	1115	1089
R-squared	0.15	0 24	0.65	0 12	0 19	0.3	0 72	0.14	0.18	0.28	0.67	0.12	0.15	0.25	0.65	0.12

Note. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.

Table 4.d. Firm-Level Analysis: Administrative Burdens and Corruption

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
Time with regulators/inspectors	0.048	0.009	-0.087	0 023								
	(2.19)**	(0.94)	(1.31)	(0.91)								
Share of firms refusing to answer managers' time with regulators					-0.019	0.003	-0.186	-0.022				
					(0.62)	(0.21)	(2.12)**	(0.61)				
share of sales lost from theft or breakage									-0.179	-0.028	-0.230	0.043
									(1.00)	(0.37)	(0.43)	(0.21)
log(initial sales)	-0.028				-0.027				-0.027			
	(4.70)***				(4.49)***				(4.55)***			
log (initial capital)		-0 027				-0.027				-0.027		
		(8.65)***				(8.11)***				(8.62)***		
log(labor)			-0.034				-0.037				-0.040	
			(1.34)				(1.43)				(1.57)	
log (initial labor)				-0.057				-0.056				-0.055
				(5.70)***				(5.35)***				(5.62)***
log(firm age)	-0.145	-0.073	-0.352	-0.093	-0.141	-0.074	-0.354	-0.094	-0.145	-0.073	-0.351	-0.094
	(11.10)***	(14.34)***	(10.00)***	(5.83)***	(10.49)***	(13.90)***	(9.84)***	(5.60)***	(11.06)***	(14.33)***	(9.97)***	(5.85)***
Constant	0.589	0.300	2.605	0.475	0.607	0.306	2.603	0.391	0.597	0.303	2.609	0.479
	(8.94)***	(12.65)***	(12.44)***	(6.60)***	(8.90)***	(12.42)***	(12.32)***	(5.54)***	(9.02)***	(12.73)***	(12.42)***	(6.67)***
Observations	1222	1300	1265	1237	1131	1203	1167	1143	1222	1300	1265	1237
R-squared	0.16	0.25	0.65	0.12	0.15	0.25	0.66	0.12	0.15	0.25	0.65	0.12

Note. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.

Table 4.e. Firm-Level Analysis: Finance

	Sales growth	Investment rate	TFP	Employment growth
Finance index	0.051	0.022	0.143	0.047
	(5.30)***	(5.65)***	(5.00)***	(4.31)***
share capital leveraged				
log(initial capital)		-0.032		
		(9.82)***		
log(labor)			-0.101	
			(3.63)***	
log(initial labor)				-0.072
				(7.13)***
log(initial sales)	-0.039			
	(6.17)***			
log(firm age)	-0.140	-0.071	-0.347	-0.078
	(10.68)***	(14.03)***	(9.78)***	(4.97)***
Constant	0.719	0.391	3.359	0.625
	(9.99)***	(15.48)***	(14.38)***	(8.65)***
Observations	1185	1258	1228	1197
R-squared	0.17	0.26	0.65	0.13

Note. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.

Table 4.f. Firm-Level Analysis:
Entry and Exit

	Sales growth	Investment rate	TFP	Employment growth	Sales growth	Investment rate	TFP	Employment growth
Excess capacity	-0.238	-0.025	-0.905	-0.132				
	(4.03)***	(0.98)	(5.25)***	(1.98)**				
Contracting as share of costs					0.104	0.064	0.729	0.154
					(0.94)	(1.39)	(2.24)**	(1.29)
log(initial capital)		-0.025				-0.026		
		(7.93)***				(8.46)***		
log(labor)			-0.052				-0.046	
			(2.05)**				(1.78)*	
log(initial labor)				-0.058				-0.057
				(6.02)***				(5.96)***
log(initial sales)	-0.032				-0.026			
	(5.35)***				(4.38)***			
log(firm age)	-0.132	-0.071	-0.311	-0.078	-0.138	-0.070	-0.355	-0.081
	(9.89)***	(13.79)***	(8.80)***	(4.94)***	(10.46)***	(13.62)***	(9.92)***	(5.18)***
Constant	0.727	0.342	2.947	0.367	0.719	0.351	3.145	0.527
	(10.11)***	(14.05)***	(13.48)***	(5.72)***	(9.82)***	(14.25)***	(14.06)***	(7.63)***
Observations	1197	1274	1240	1214	1188	1261	1231	1200
R-squared	0.16	0.25	0.66	0.12	0.15	0.24	0.65	0.12

Note. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.

Table 5. Investment Climate and Firm Performance: Firm-Level Analysis, All Variables Included

	Sales growth	Sales growth	Investment rate	Investment rate	TFP	TFP	Employment growth	Employment growth
Share foreign ownership	0.227	0.225	-0.021	-0.023	0.910	0.901	0.206	0.203
	(3.26)***	(3.23)***	(0.76)	(0.83)	(5.10)***	(5.07)***	(3.62)***	(3.56)***
Share domestic private ownership	-0.020	-0.025	-0.001	-0.004	0.493	0.509	-0.028	-0.035
	(0.45)	(0.57)	(0.05)	(0.24)	(4.04)***	(4.18)***	(0.77)	(0.95)
Imports as share of domestic market	-0.023	-0.022	-0.040	-0.041	0.330	0.360	0.083	0.084
	(0.26)	(0.24)	(1.10)	(1.14)	(1.41)	(1.54)	(1.10)	(1.12)
Exports as share of sales	-0.046	-0.047	0.018	0.018	-0.142	-0.132	0.021	0.018
	(0.78)	(0.79)	(0.77)	(0.76)	(0.93)	(0.87)	(0.42)	(0.38)
border	-0.008		-0.011		-0.140		0.157	
	(0.04)		(0.13)		(0.26)		(0.92)	
Excess capacity	-0.262	-0.270	-0.016	-0.019	-0.744	-0.731	-0 142	-0.150
	(3.29)***	(3.38)***	(0.50)	(0.58)	(3.59)***	(3.54)***	(2.15)**	(2.27)**
Contracting as share of costs	0.058	0.056	0.033	0.035	0.836	0.742	0.080	0.091
	(0.37)	(0.35)	(0.55)	(0.58)	(2.13)**	(1.88)*	(0.67)	(0.75)
Share of nonpermanent workers	0.123	0.119	0.092	0.088	0.442	0.472	0.068	0.058
	(1.71)*	(1.65)*	(3.22)***	(3.04)***	(2.40)**	(2.56)**	(1.14)	(0.97)
Share of labor that receives formal training	0.090	0.089	0.053	0.052	0.004	0.014	0.027	0.024
	(2.78)***	(2.72)***	(3.97)***	(3.93)***	(0.04)	(0.16)	(1.00)	(0.89)
Staff quality index	0.013	0.015	0.021	0.021	0.100	0.112	-0.010	-0.008
	(0.70)	(0.84)	(2.89)***	(2.91)***	(2.09)**	(2.34)**	(0.68)	(0.55)
Finance index	0.035	0.034	0.012	0.013	0.098	0.073	0.004	0.005
	(2.58)**	(2.48)**	(2.18)**	(2.41)**	(2.73)***	(1.99)**	(0.39)	(0.40)
share capital leveraged	0.163	0.160	0.008	0.003	-0.004	0.044	0.138	0.134
	(2.69)***	(2.62)***	(0.33)	(0.12)	(0.03)	(0.27)	(2.73)***	(2.64)***
R&D index	0.013	0.011	0.021	0.020	0.067	0.065	0.032	0.028
	(0.90)	(0.73)	(3.68)***	(3.47)***	(1.68)*	(1.61)	(2.57)**	(2.25)**
	-0.405	-0.388	-0 075	-0.075	0.663	0.909	0.003	-0.012
share of sales lost from theft or breakage	(1.15)	(1.09)	(0.52)	(0.52)	(0.71)	(0.97)	(0.01)	(0.04)
	-0.307	-0.340	-0.116	-0.144	-1.365	-1.070	-0.276	-0.333
share sales lost from electricity outages	(1.00)	(1.10)	(0.92)	(1.13)	(1.65)*	(1.29)	(1.08)	(1.29)
ICT index	0.052	0.051	0.016	0.015	0.292	0.276	-0.015	-0.014
	(2.34)**	(2.26)**	(1.76)*	(1.72)*	(5.09)***	(4.74)***	(0.82)	(0.74)

Table 5. Investment Climate and Firm Performance: Firm-Level Analysis, All Variables Included (Cont'd)

	Sales growth	Sales growth	Investment rate	Investment rate	TFP	TFP	Employment growth	Employment growth
Share of firms refusing to answer	-0.021	-0.027	0.009	0.006	-0.079	-0.051	0.036	0.024
managers' time with regulators	(0.52)	(0.67)	(0.54)	(0.37)	(0.77)	(0.48)	(1.09)	(0.70)
Time with regulators/inspectors	0.060	0.057	0.007	0.003	0.004	0.015	0.015	0.012
	(1.58)	(1.49)	(0.43)	(0.18)	(0.04)	(0.14)	(0.46)	(0.37)
log (initial sales)	-0.079	-0.080						
	(7.45)***	(7.50)***						
log (initial capital)			-0.053	-0.052				
			(10.39)***	(10.19)***				
log (initial labor)							-0.095	-0.095
							(7.92)***	(7.93)***
log (labor)					-0.118	-0.110		
					(2.96)***	(2.77)***		
log (firm age)	-0.087	-0.084	-0.052	-0.053	-0.145	-0.131	-0.016	-0.015
	(4.12)***	(3.96)***	(6.67)***	(6.78)***	(3.00)***	(2.71)***	(0.88)	(0.83)
Constant	0.784	0.800	0.262	0.253	1.576	1.270	0.387	0.369
	(4.63)***	(4.93)***	(4.38)***	(4.54)***	(3.22)***	(2.65)***	(3.02)***	(2.89)***
City dummies included	yes	no	yes	no	yes	no	yes	no
industry dummies	yes	yes	yes	yes	yes	yes	yes	yes
Observations	569	569	603	603	606	606	572	572
R-squared	0.29	0.29	0.38	0.39	0.80	0.80	0.25	0.26

Note. *, **, and *** represent statistical significance at the 10, 5 and 1 percent levels. City and industry dummies included.

Table 6. Simulated Change in Firm Performance Resulting from A One-Standard-Deviation Change in IC Variables

one standard deviation of variable X	change in X	change in SALEGROWTH	Change in investment rate	change in TFP	Change in employment growth rate
Share foreign ownership	0.352	**0.079**		**0.317**	**0.071**
Excess capacity *	0.232	**0.063**		**0.17**	**0.035**
Contracting as share of costs	0.104			**0.077**	
Share of nonpermanent workers	0.243	**0.029**	**0.021**	**0.115**	
Share of labor that receives formal training	0.532	**0.047**	**0.028**		
Staff quality index	1.411		**0.03**	**0.158**	
Finance index	1.365	**0.046**	**0.018**	**0.1**	
R&D index	1.297		**0.026**	**0.084**	**0.036**
ICT index	1.315	**0.067**	**0.02**	**0.363**	

Note. For excess capacity, the impact is a one-standard-deviation decrease. The simulation is based on the specifications in Table 5.

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